

(12) UK Patent Application (19) GB (11) 2 235 186 A

(43) Date of A publication 27.02.1991

(21) Application No 8920840.9

(22) Date of filing 14.09.1989

(30) Priority data

(31) 8918550

(32) 15.08.1989

(33) GB

(51) INT CL⁵
B65D 53/04

(52) UK CL (Edition K)
B8T TAD T13A

(56) Documents cited

GB 2052455 A GB 1052461 A EP 0025991 A1
US 4774134 A US 4585135 A

(58) Field of search
UK CL (Edition J) B8T TAD TAR TAX TCA TCC
THMS
INT CL⁴ B65D 41/00 53/00

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(54) Composite cap assembly

(57) A cap assembly comprises a plastics cap (11) with an insert-moulded gas-impermeable barrier sheet 25 adhered to the inner surface of the top (12) of the cap. The top has an inner, annular projection 15 defining a channel 17 between the projection and a skirt 13 and the whole of the area of the inner surface of the top within the projection is covered by the barrier sheet 25. A sealing gasket 20 may be retained in the channel 17 or the projection 15 may be designed for sealing engagement (Fig. 2) with a container rim.

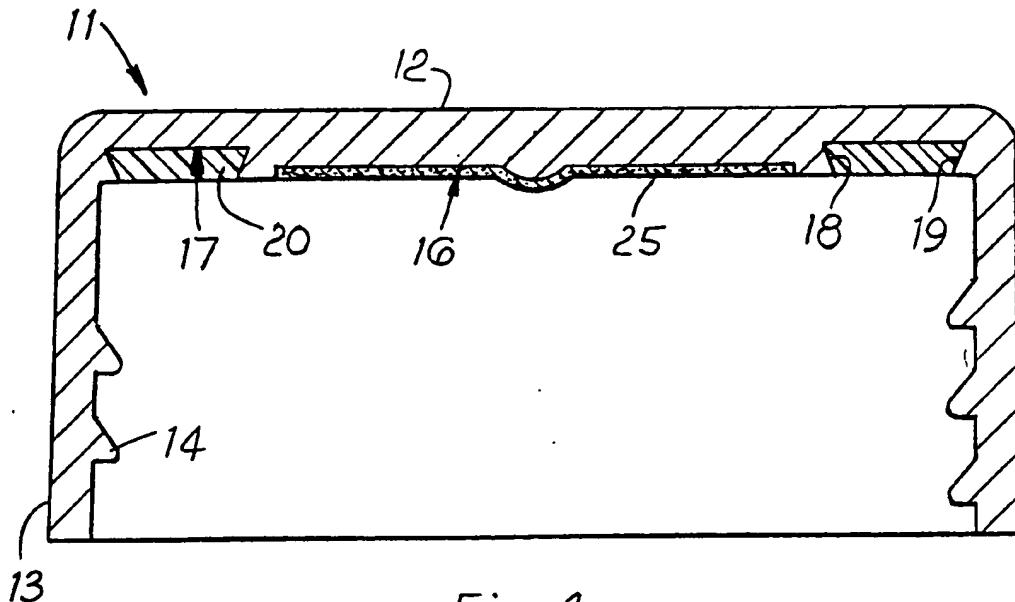


Fig. 1

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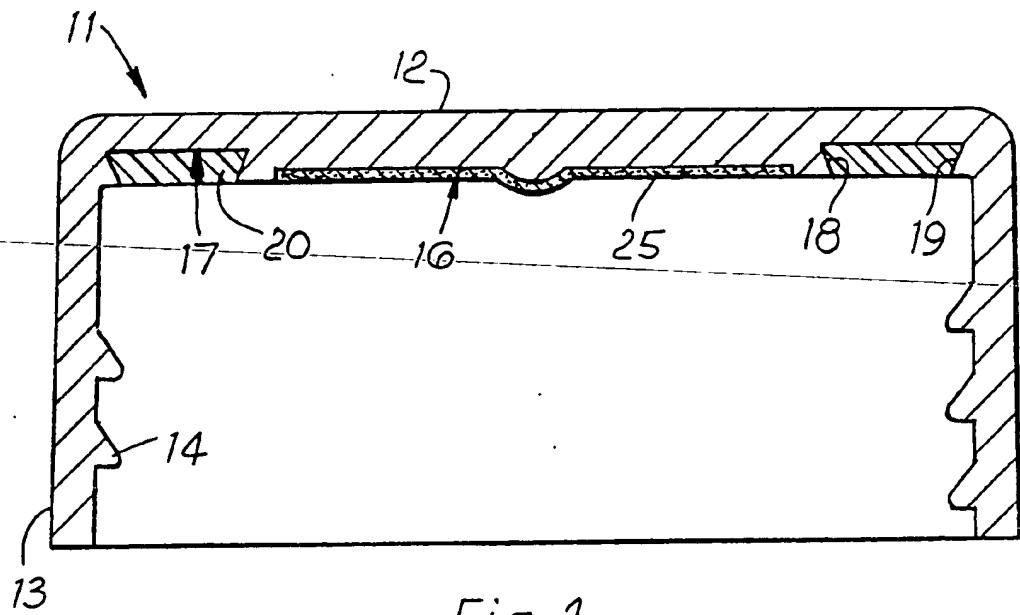


Fig. 1

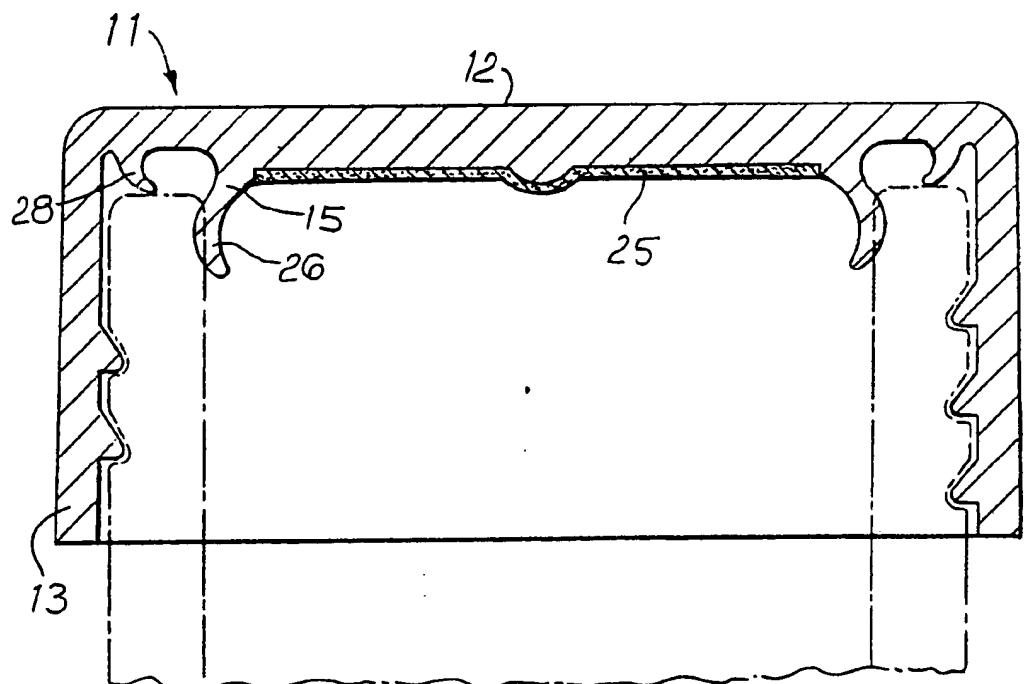


Fig. 2

COMPOSITE CAP ASSEMBLY AND MOULD THEREFOR

This invention relates to a composite cap assembly and mould therefor.

It has been well known for many years to close jars with a sealing gasket, a cover disc and a ring screw-engaged on the jar and having a flange to consolidate the disc, gasket and jar rim.

GB-A-1477902 discloses such an arrangement having a metal cover disc, a plastisol gasket and a moulded plastics ring.

EP-A-0269920 discloses a similar arrangement using a cover disc made of tin plate or a composite material.

EP-A-0272431 also discloses a similar arrangement with a metal or "barrier plastic" cover disc.

The purpose of this type of assembly is to provide an enclosure which is gas-impermeable, so that the contents cannot spoil. Such assemblies are used particularly for food. The combination of a metal disc closing a glass jar provides a good gas-impermeable enclosure, although the arrangement is expensive and the metal may corrode. The use of a composite barrier material, e.g. a metal foil and plastics laminate avoids the corrosion problem, but the problem of expense remains.

It is known to provide a composite cap assembly comprising a unitary moulding having a closed top and threaded skirt, with a sealing liner on the inside surface of the top of the cap. EP-A-0094026 discloses such a construction with a flowed-in liner, mechanically held in a peripheral channel adjacent the top. This arrangement provides a cheap cap, but does not provide the gas-impermeable properties necessary for long storage of food.

Recently a composite cap assembly has been proposed which does have these gas-impermeable properties. US-A-4774134 discloses a laminated cover disc, made of metal foil with a plastisol on one face and a polyolefin on the opposite face. The disc is insert-moulded in an injection moulded cap. The cap is moulded from a polyolefin, which fuses with the polyolefin layer of the laminate to adhere the cover disc to the inner surface of the top of the cap. A plastisol gasket is flowed-in around the edge of the cover disc and is adhered to the plastisol coating on the disc.

With this arrangement, reliance is placed wholly on adherence of the gasket to the cover disc for holding the gasket in place. This may be less of a problem with a gasket covering the whole top, but this is expensive and an annular gasket is preferred. To ensure adhesion, an additional heating process is involved.

The present invention avoids the problems of the prior art.

It has always been thought necessary to cover the whole inside surface of the top of the cap with a barrier material, so that the barrier extends over the rim of the container, in use. It has been found that this is unnecessary and that a cheaper and more easily produced cap assembly can be made, which is effective in sealing a container against gas-permeability.

In accordance with this invention, there is provided a cap assembly comprising a plastics cap with an insert-moulded gas-impermeable barrier sheet, the cap having a top and a skirt for engagement with a container, the top having an annular projection defining a channel between the projection and the skirt, the barrier sheet being adhered to the inner surface of the top and covering the whole of the inner surface defined within the inner periphery of the annular projection, the projection being a sealing member for sealing engagement with the container, or serving to retain a sealing gasket in said channel.

Reference is now made to the accompanying drawings,
wherein:-

Figure 1 is a sectional view of a first embodiment of the invention; and

Figure 2 is a sectional view of a second embodiment of the invention.

The cap assembly shown in Figure 1 comprises a cap 11 having a top 12 and skirt 13. The inner surface of the skirt is provided with screw threads 14. The cap is an injection moulding, e.g. from polypropylene.

The inner surface of the top 12 of the cap has a dependent annular projection 15 defining a central circular area 16 and an annular channel 17. The inner peripheral side 18 of the channel 17 is slightly angled towards the skirt and the opposite side 19 of the channel is oppositely angled to form a slight dove-tail like cross-section.

A resilient sealing gasket 20 of elastomeric material is push-fitted or flowed-in to the channel 17.

A disc-shaped gas-impermeable barrier sheet, or cover 25 is fixed in contact with the circular area 16 of the top of the cap. The cover is cut from a sheet of laminated barrier material, which may comprise a poly-propylene layer having a metallised surface, e.g. an aluminium coating, and a protective coating on the metallised surface, e.g. of polytetrafluoroethylene, a plastisol or polypropylene.

The cover is insert-moulded by being positioned on the core of a mould and the cap moulded around the cover. The polypropylene layer is thereby fused with the top of the cap and is closed-fitted to the projection 15, since the latter is moulded around the periphery of the cover.

Referring now to Figure 2, the projection 15 is formed with an annular tongue 26, which is resilient and integrally moulded with the cap. The channel 27, between the projection 15 and the skirt 13, may be formed with a second annular tongue 28. These tongues replace the gasket 20 of the first embodiment for sealing the cap to a container mouth, shown in dash-dot lines.

The second tongue 28 seals on the top of the rim of the mouth and the first tongue 26 seals on the inner peripheral wall of the mouth. The first tongue is shaped, sized and positioned, so that the tongue is tensioned against the mouth wall to provide a good seal.

CLAIMS

1. A cap assembly comprising a plastics cap with an insert-moulded gas-impermeable barrier sheet, the cap having a top and a skirt for engagement with a container, the top having an annular projection defining a channel between the projection and the skirt, the barrier sheet being adhered to the inner surface of the top and covering the whole of the inner surface defined within the inner periphery of the annular projection, the projection being a sealing member for sealing engagement with the container, or serving to retain a sealing gasket in said channel.
2. A cap assembly according to Claim 1, wherein the projection is located so that a rim of the container is receivable in the channel with the projection sealingly engaging the inner peripheral surface of the rim.
3. A cap assembly according to Claim 1, wherein the gasket is flowed-in to the channel.
4. A cap assembly according to Claim 1, 2 or 3, wherein the barrier sheet comprises a plastics material having a metallised surface, the plastics material being fused to the cap by the moulding process.
5. A cap assembly according to Claim 4, including a protective layer on the metallised surface.

6. A cap assembly substantially as described with reference to Figure 1 or Figure 2 of the accompanying drawings.